

What is Claimed is:

1. A method for fabricating a capacitor of a semiconductor device, comprising the steps of:
 - 5 forming a storage electrode using silicon;
 - sequentially depositing a first Al₂O₃ film, a Ta₂O₅ layer doped with Ti, and a second Al₂O₃ film on the storage electrode to form a dielectric film; and
 - forming a plate electrode on the dielectric film
 - 10 using metal.
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2. The method according to claim 1, wherein the first Al₂O₃ film and the second Al₂O₃ film is formed in a LPCVD process, an ALD process or a PECVD process.
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3. The method according to claim 1, the first Al₂O₃ film, the Ta₂O₅ layer doped with Ti, and the second Al₂O₃ film have a thickness ranging from 5 to 100Å, respectively.
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4. The method according to claim 1, wherein the Ta₂O₅ layer doped with Ti is formed using a cocktail source containing 1 - 50% of a Ti source in an in-situ doping process.

5. The method according to claim 4, wherein the in-situ doping process is performed using a mixture of the cocktail source and O₂ gas.

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6. The method according to claim 1, wherein the Ta₂O₅ layer doped with Ti is formed in an ALD process, an MOCVD process or a PECVD process.

10 7. A capacitor of a semiconductor device, comprising:

a storage electrode comprising silicon;
a dielectric film disposed on the storage electrode,
the dielectric film including a stacked structure of a
15 first Al₂O₃ film, a Ta₂O₅ layer doped with Ti, and a second
Al₂O₃ film; and
a metal plate electrode disposed on the dielectric
film.